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ABSTRACT

Educational research among indigenous peoples has often been flawed. Many studies on achievement motivation, cognitive development, and learning styles have failed to establish that the behaviors and responses being measured were functionally, conceptually, or metrically equivalent to those from which norms for comparison were drawn, and that the constructs and tools used were culturally appropriate. Earlier psychometric research was so narrowly focused on measuring the status of indigenous groups against Western norms that the importance of investigating other culturally relevant aspects was neglected. As a consequence, psychometric research (especially that carried out by outsiders) fell into disfavor and disrepute among indigenous groups. Appropriate use of psychometric research for eliciting culturally valid and useful information for indigenous communities is described, calling on continuing research with Koori (Australian aboriginal) and Navajo (American Indian) communities. Research designs that assume that constructs and instruments used are universal, with equal meaning for all cultures (ETIC approach), and those that study behavior from within one cultural system (EMIC approach) both have some shortcomings. A combination ETIC/EMIC model was applied to the study of how approximately 100 Koori parents conceptualize education and the underachievement of their children, and dimensions of motivation among 496 Koori secondary school students in New South Wales (Australia) and 529 Navajo high school students. The methodology, including use of Koori and Navajo research assistants, ensured that the communities had ownership of the research, and demonstrated the usefulness of psychometrics in understanding indigenous educational issues. Three flowcharts illustrate the methodology. (Contains 27 references.) (Author/SLD)

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Symposium Paper

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# Indigenous Educational Research Can it be Psychometric?

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Abstract

Educational research among indigenous peoples has often been flawed. Many studies on achievement motivation, cognitive development, and learning styles failed to establish that the behaviours and responses being measured were functionally, conceptually or metrically equivalent to those from which norms for comparison were drawn, and that the constructs and tools used were culturally appropriate.

Earlier psychometric research was so narrowly focused on measuring the status of indigenous groups against Western norms that the importance of investigating other culturally relevant aspects was neglected. As a consequence psychometric research (especially that carried out by outsiders) fell into disfavour and disrepute among indigenous groups.

In this paper I wish to describe an appropriate use of psychometric research for eliciting culturally valid and useful information for indigenous communities. By referring to my continuing research with Koori and Navajo communities I will demonstrate the methodology used to ensure that the communities have ownership of the research, and how psychometrics can be a valuable and indeed essential tool in understanding important indigenous educational issues.

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# INDIGENOUS EDUCATIONAL RESEARCH
# CAN IT BE PSYCHOMETRIC?

**Dennis M McInerney**

**University of Western Sydney, Macarthur**

**Paper presented at the AARE/NZARE Conference**
**"Educational Research: Discipline and Diversity"**
**Geelong, Victoria - 22-26 November, 1992**

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## INTRODUCTION

Psychometric educational research among indigenous peoples has often been flawed (Davidson & Thomson, 1980; DeVos, 1968, 1973; DeVos & Caudhill, 1973; Draguns, 1979; Maehr, 1974; Maehr & Lysy, 1978; Maehr & Nicholls, 1980, McInerney, 1986, 1990; McInerney & Sinclair, 1992). Much earlier psychometric research was also so narrowly focused on measuring the status of indigenous groups against Western norms that the importance of investigating other culturally relevant aspects was neglected As a consequence psychometric research (especially that carried out by outsiders) fell into disfavour and disrepute among indigenous groups.

Among the more significant methodological and conceptual limitations of many earlier studies on achievement motivation are:

1. Failure to establish that the behaviours and responses being examined cross-culturally are functionally, conceptually or metrically equivalent, and that the constructs and tools are culturally appropriate.

2. An absence of experimental verisimilitude, i.e., the use of experimental framewords that bear little relationship to "real life" situations.

3. Making comparisons between groups based solely on the mean differences between groups with culture being used as the independent variable.

4. Little or no attempt to consider the emic dimensions of the concepts studied.

5. Little detailed consideration of the mediating processes that might intervene between culture and achievement orientation.

6. Undue emphasis on achievement orientation as a personality characteristic, relatively fixed, present in some while absent in others.

7. Undue emphasis on cultural deficit and deprivation models to explain the differential performance of various cultural groups.

8. Confusion between cross-cultural and cross-ethnic parameters of research (many studies fail to control for the range of shared experiences in cross-ethnic studies).

Two issues are of particular concern here. Firstly, researchers may implement research designs which assume that the constructs and instruments used are universal and have equal meaning in all cultures. This has been described as an ETIC approach. Unfortunately, much research is in fact pseudoetic, failing to adequately demonstrate the

applicability of the constructs or instruments used for particular groups (Brislin, 1976; Triandis & Marin, 1983). At its best an ETIC approach examines data from many cultures and extracts common elements across cultures. However, in using such an approach investigators may miss variables of particular importance to particular sub-groups. Clark's (1978) Cognitive Style and School Achievement of Aboriginal and Anglo Australian Children in Urban and Rural Locations illustrates etic research.

In contrast, some researchers use an EMIC approach. An emic approach studies behaviour from within one cultural system and is based on data from only one culture. The emic description of behaviour takes into account what members of the cultural group themselves value as meaningful and important. The limitation of this approach is that general comparisons across groups cannot easily be made, and findings can not be extrapolated validly to other groups. Stephen Harris' (1977) Milingimbi Aboriginal Learning Contexts is an example of emic research.

Brislin (1983, p.383) states "Research has recently shown that aspects of some general concepts are etic and that others are emic. The need for achievement ... includes the etic of goal setting, but the Japanese emic is that the goals can be group oriented, and in the United States they are more frequently individual oriented. It should be noted that a combination of etics and emics is necessary for an understanding of a concept as it is found in any given culture."

In this paper I describe one appropriate use of psychometric research for eliciting culturally valid and useful information for indigenous communities. By referring to my continuing research with Koori and Navajo communities I will demonstrate the methodology used to ensure that the communities have ownership of the research, and how psychometrics can be a valuable and indeed essential tool in understanding important indigenous issues.

To address the issue of the poor retention and under achievement of Koori and Navajo children an etic-emic model of research was adopted. The model was used to answer the following questions:

1. What are the most important features of motivation of indigenous minority children in mainstream schooling?
2. What are the relevant background factors which facilitate motivation in these settings?
3. What are the dynamics of decision making that orient indigenous minority children to continue with school beyond the minimum school leaving age?
4. How can schools be made more adaptive to the special needs of indigenous minority children?

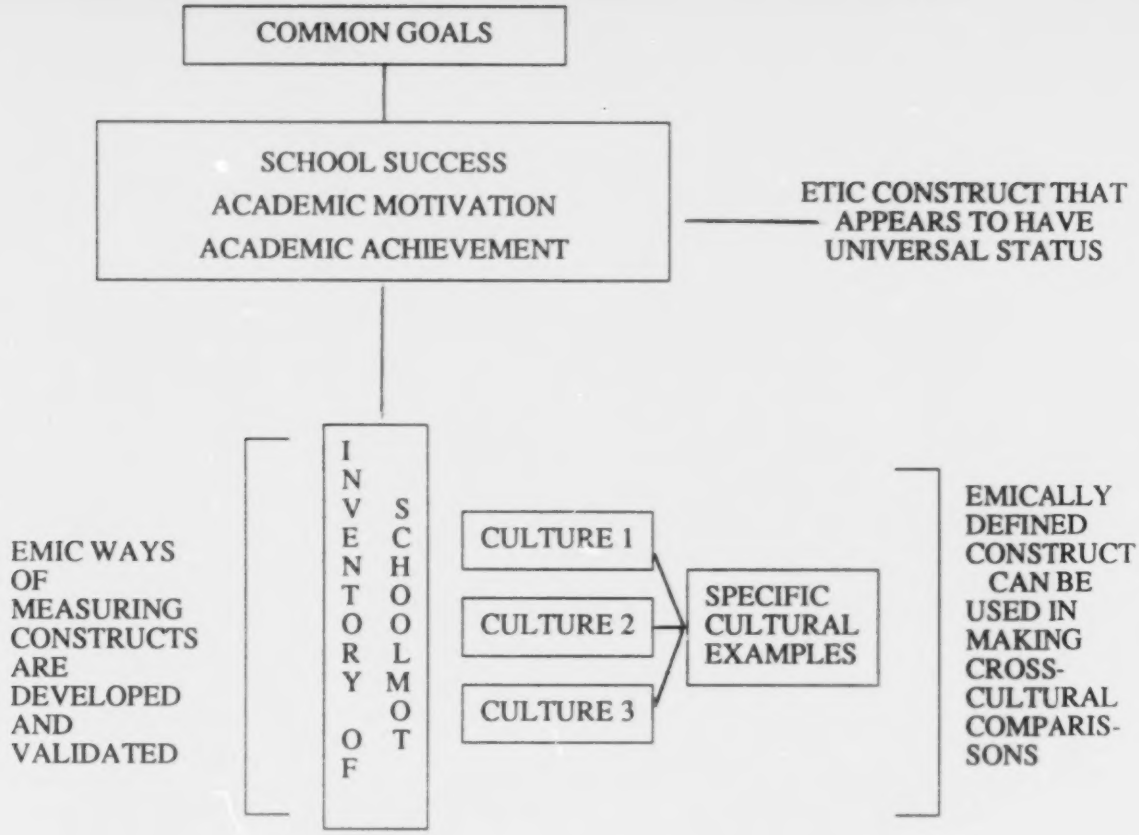



**Figure 1** Illustrating the combined etic-emic model.

## RESEARCH OVERVIEW

### *ETIC/EMIC research*

A theoretical model with clear and significant implications for methodological improvements in cross-cultural research on achievement motivation and which addresses the ETIC-EMIC issue is Maehr's Personal Investment Model (Maehr, 1984; Maehr and Braskamp, 1986).

In its broadest interpretation the model conceptualizes motivated behaviour as being determined by three ETIC variables: personal incentives, sense of self and facilitating conditions.

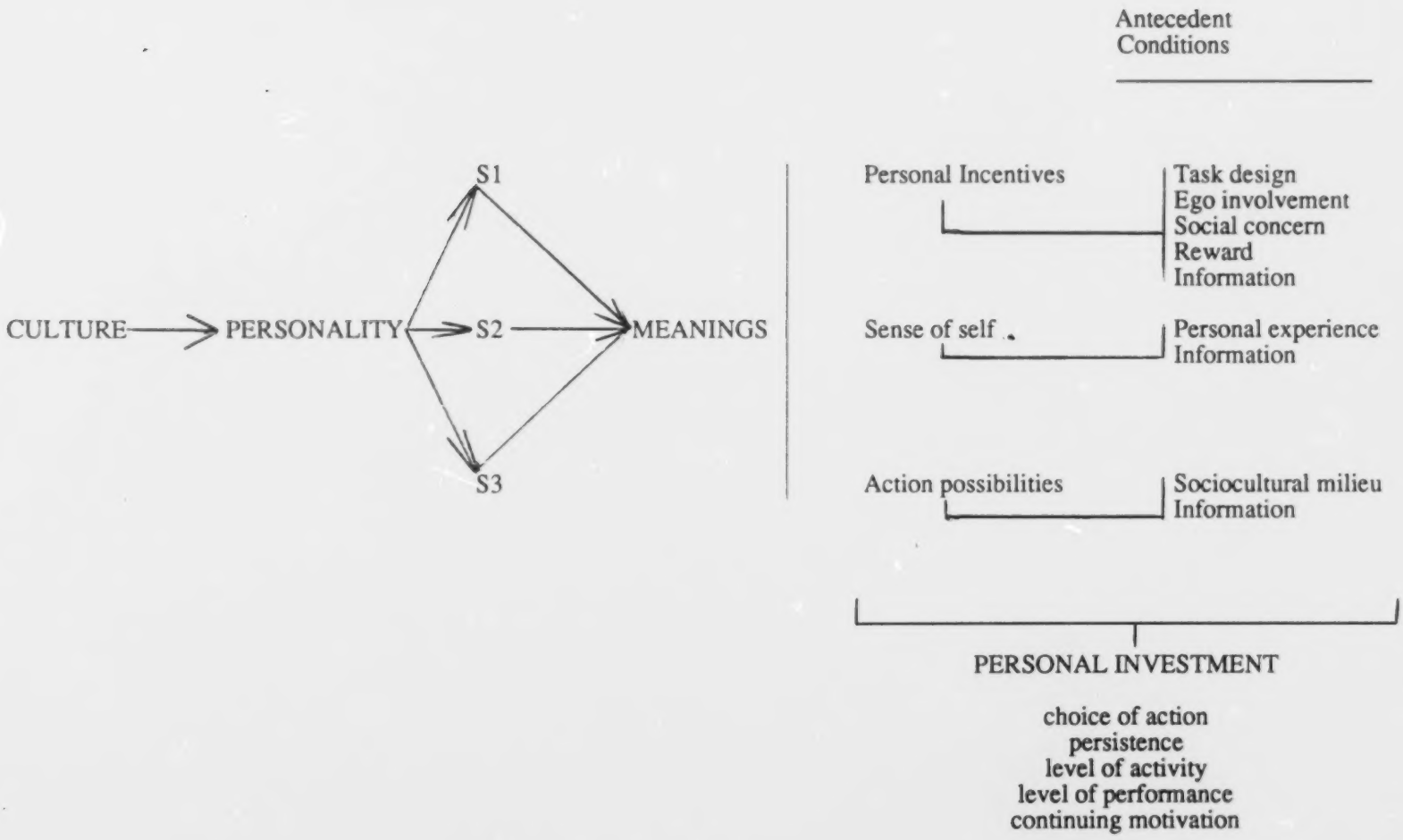
**Personal Incentives** of behaviour in a situation refer to the motivational foci of activity; importantly what the person defines as 'success' and 'failure' in a particular situation. Maehr proposes four personal incentive systems which are hypothesised to be universal: Task motivation (such as experiencing adventure, novelty or working to understand something), Ego motivation (such as doing better than others), Social Solidarity motivation (such as pleasing others and making others happy), and Extrinsic Rewards motivation (such as working for a prize or reward of some kind). Each of these components may be devided into two facets:

| | |
|---|---|
| Task | Task Involvement (experiencing adventure/novelty)<br>Striving for excellence (undersanding something, wishing to improve) |
| Ego | Competitiveness (doing better than others)<br>Group Leadership (leading) |
| Social Solidarity | Affiliation (working with the group you like)<br>Social Concern (concern for the welfare of your group) |
| Extrinsic Rewards | Recognition (being praised by others)<br>Token Rewards (getting prizes) |

The second ETIC component is defined by Maehr as **Sense of Self**, which refers to the more or less organized collections of perceptions, beliefs, and feelings related to who one is. Sense of Self is presumed to be composed of a number of components such as sense of competence, sense of autonomy and sense of purpose, each contributing to the motivational orientation of the individual. The third component, **Facilitating Conditions** refers to the behavioural alternatives that a person perceives to be available and appropriate (in terms of sociocultural norms and external factors such as geographic location and socio-economic status that exist for the individual) in a given situation. The present paper only deals with the Personal Incentives and Sense of Self components of the model (see McInerney 1990a, for a description of the Faciliating Conditions Questionnaire and its use).

Each of these components of Personal Investment (PI) may be influenced differentially by the design of the task, the personal experience and access to information of the individual, and the sociocultural context. Maehr suggests, for example, that personal experience seems to have a major impact on one's sense of self, whereas information and the sociocultural context tend to be especially important in selecting behavioural options. According to this model the contents of each of these meaning components are derived from the dual factors of situation and person, and in a complex of person X situation interactions (Maehr, 1982). The following diagram illustrates the components of personal investment and the antecedents and consequences of personal investment.

**Figure 2 Antecedents and consequents of personal investment**



While the components of the model are conceptualised as ETIC, their nature and operation are considered to be specific to a particular group and must be evaluated on the basis of EMIC data obtained from the group.

The research had therefore a blueprint. Firstly, it was necessary to demonstrate that these global variables were indeed etic i.e., were broadly relevant to each group studied, and secondly, to elicit from the groups being studied the emic nature of the components of these etic variables, i.e., the particular characteristics of these variables as they applied to each group.

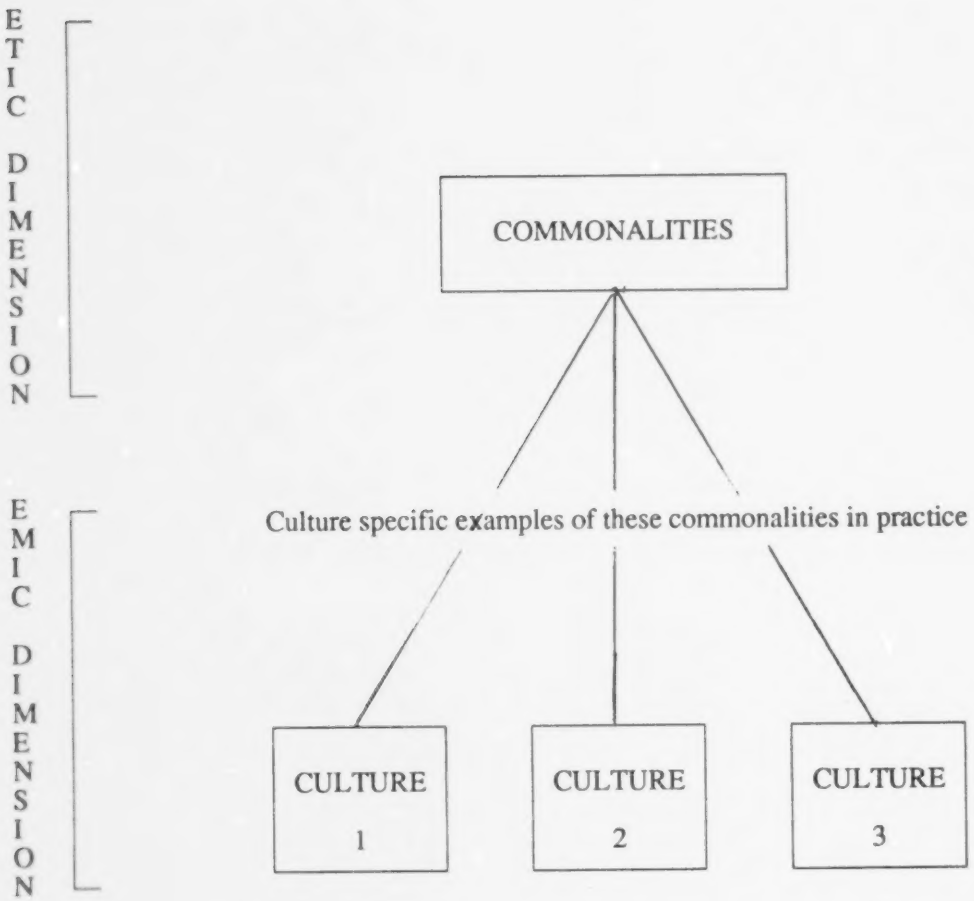



**Figure 3** **A search of common elements by examining the subjective meaning of achievement cross-culturally.**

***Instruments***

Parental surveys

At the outset the researcher gathered qualitative data on how Koori people conceptualized education and what they perceived as major issues in the underachievement of Koori children in school settings. The data were obtained in three ways: personal interviews and group discussions with members of the Koori community; written survey forms distributed to Koori parents, and an examination of existing reports relating to the area of inquiry. In all, over one hundred Koori parents were interviewed and 106 completed a written survey form.

For the Navajo group, consultations were held with members of the community, the Navajo Division of Education and Indian Education Specialists (it was not possible to interview Navajo parents at the time of the study, although this is recognised as an important strategy for later work).

An very important element was to include Koori and Navajo research assistants, who not only facilitated the access of the researcher to community groups, but who also contributed to the research by their clarification of issues raised by the respondents.

The results of these surveys are reported in McInerney (1988a, 1989a, under review). This qualitative research established the etic validity of the constructs: social pressures, affect, incentives, and consequences for the Koori and Navajo communities. Furthermore, the qualitative data obtained suggested the dimensions that were relevant and necessary for operationalising these constructs at the emic level.

**The Inventory of School Motivation (ISM)**

This instrument is designed to measure the following eleven dimensions of the Maehr model which had been demonstrated to be relevant to the groups being studied: self-reliance, self-esteem, goal directed behaviour, competitiveness, power, recognition, token rewards, social concern, affiliation, task involvement, and striving for excellence. Inventory questions relate to the following dimensions of the Personal Investment Model: **Sense of Self**: sense of competence (e.g., I can do things as well as most people at school), sense of purpose (e.g., it is good to plan ahead to complete my schooling); **Ego**: competitiveness (e.g., winning is important to me), group leadership (e.g., I often try to be the leader of a group); **Extrinsic**: recognition (e.g., having other people tell me that I did well is important to me), token rewards (e.g., getting merit certificates would make me work harder at school); **Social Solidarity**: social concern (e.g., it is very important for students to help each other at school), affiliation (e.g., I try to work with friends as much as possible at school); **Task**: task involvement (e.g., the more interesting the school work the harder I try), and striving for excellence (e.g, I try hard to make sure that I am good at my schoolwork). The items were designed in collaboration with an Aboriginal Consultative group established by the then National Aboriginal Education Committee (NAEC) and the New South Wales Aboriginal Education Consultative Group (AECG) to oversee the research. Furthermore, trial runs on the questions were conducted with members of the Aboriginal community enrolled in University subjects taught by the researcher as part of the Aboriginal Rural Education Program. The instrument was reviewed by members of the Navajo community and Indian Education Specialists. Minor changes were made to reflect the Navajo (and United States!) idiom. Items were scored using a Likert-type five point scale from 1 strongly agree to 5 strongly disagree.

The instrument was administered under standardized conditions. Koori and Navajo assistants helped with the administration.

***The samples***

Four hundred and ninety six Koori students were surveyed from Years 7, 8, 9, 10 and 11 from 12 high schools in New South Wales broadly typical of the types of country and city schools that Koori children attend (e.g., Redfern, Matraville, Dubbo, Nowra, Wellington). Comparator Anglo and Migrant groups were included in the Australian study to further test the efficacy of the methodology (1172 Anglo students and 487 migrant background students). Five hundred and twenty nine Navajo students from Grade 9 through to Grade 12 were surveyed at Window Rock High School, a large high school situated on the Navajo Reservation.

***Research strategy***

Broadly, the following research strategy was used:

1). Design an instrument based on the theoretical ETIC/EMIC model which effectively reflected key variables determined in presurveying to be relevant to the groups being studied;
2). Factor analyse the instrument (ISM) separately for each group to determine the construct validity and reliability of the scales (in effect, to establish the etic nature of the global variables and the emic content of the scales);
3). Use the derived scales in multiple regression analyses and discriminant analyses against the criterion variables of intention to complete school or leave school at the minimum school leaving age;
4). Determine the most salient variables within each group separately, and to draw comparisons across groups.

A major function of the analyses was to demonstrate the relationship between the predictor variables and the criterion variables within each group and to illustrate any cultural differences in the relative importance of the predictor variables. Comparisons between the three groups were not based on mean scores derived from overall analyses of the instruments combining the full sample, as this would have presumed that all items were equally relevant to each group. Separate factor analyses for each group established which items were most relevant for later analyses.

**Findings**

My research set out to explore dimensions of motivation that appear to be important to Aboriginal and Navajo students, and to further explore the relationships between these dimensions and key elements of school motivation and performance.

From the psychometric perspective the exploratory factor analyses of the Inventory of School Motivation have offered considerable empirical support to Maehr's Personal Investment Model (reported in McInerney & Sinclair, 1991, McInerney & Sinclair, 1992, McInerney, under review). Furthermore, the cross-cultural testing of the ISM indicated its validity for use in a range of cultural and social settings. The second phase of the study demonstrated the predictive power of the ISM. For each group studied (Koori, Navajo, Anglo and migrant) the combined set of culturally determined predictor scales developed from the personal investment theoretical framework were found to be significantly related to expectations about continuing with or leaving school, and a range

of other demographic variables (such as school attendance and school achievement). Furthermore, the combination of scales involved varied between cultural groups enabling researchers to compare and contrast both the etic components of the model and the emic content defining the scales.

The Inventory of School Motivation has been able to suggest combinations of variables that appear most useful in predicting student performance and attitudes across a number of important school variables. As the findings of each of the studies are reported in detail elsewhere I will only briefly describe the most important finding and the utility of the etic-emic approach used for indigenous psychometric research.

Demonstrably important variables in predicting Navajo and Aboriginal student's school retention are the **Sense of Self** variables viz, the student's sense of competence in school settings, and goal directed behaviour (represented by the sense of purpose they have for schooling and the future). Variables which have been considered important by many as key determinants of Aboriginal and Navajo children dropping out of school, such as the supposed mismatch between the school's values of competitiveness, individuality, and extrinsic rewards and the children's values of affiliation, social concern and cooperation were not supported by the findings. Implications can be drawn from these analyses which suggest programs to elevate the retention and performance of a range of minority students. These have been discussed in McInerney (1989b, 1991, in press, under review).

Importantly variables found to be significant in my research are ones that, by and large, are capable of manipulation within the school context by competent teachers and school administrators. Much early research on cognitive styles, learning styles and achievement motivation, while suffering from methodological flaws, also gave little for schools and teachers to work with in terms of elevating retention and performance among minority group children.

A great strength of this approach is the notion that the variables and scales used in the psychometric analyses are determined by each group independently from a pool of possible items, and comparisons are not based upon mean scores derived from pooled group data. Future analyses will focus on the common pool of items that define the ETIC scales for each group, and on an examination of potential interaction effects between the scales and groups on particular dependent variables such as school achievement and retention.

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